Distributive Costs of Consumption Commodities

By Bruce M. Fowler and William H. Shaw

THAT the cost incurred in the flow of consumption commodities through distributive channels constitutes a substantial segment of their final cost has long been recognized. But despite this recognition there have been very few comprehensive estimates of the importance of this segment. It is the purpose of this article to set the various distributive costs—transportation charges, wholesale margins, and retail margins—in proper perspective by showing their relative magnitudes during the last decade.

These estimates of distributive costs were derived as a byproduct of the compilation of the national income in terms of final products or actual goods and services produced. The flow of consumption commodities through private enterprises, measured at final costs, constituted a major component of the study. Due to the nature of the available data, the estimating procedure involved securing data at producers' prices, classifying and allocating the different commodities into appropriate groups, and then tracing the various groups through the distributive system. A preliminary report presenting the estimates of gross commodity flow thus obtained has already been published.[1]

Although the form of the present estimates has been conditioned by their use in commodity flow estimates, and is consequently different from that of a study designed primarily for the analysis of distribution costs, the data are believed of sufficient value to warrant their presentation.[2] The recent maximum price regulation highlights the current utility of information of this type. For example, the problems of the "squeeze" and "rollback" that have developed as a result of the regulation are in part problems of the relationship between wholesale and retail margins.

Distribution of Total Cost of Consumption Commodities.

The percentage distribution of the total cost of consumption commodities is summarized in table 1 by major commodity groups. The percentage "received by the producers" is the ratio of the value of the finished commodities at the point of output to the final cost. By "point of output" is meant the location at which the fabrication of the consumption commodity has been completed. Thus, all raw material and processing costs are included. The percentage of the final cost going to transportation agencies refers solely to the cost of moving the commodities from the producer to the initial distributor, since the cost of transporting raw materials and partly processed goods is already included in the value at the point of output and the costs of moving finished commodities between the various distributors and from the retailers to consumers are included in the wholesale and retail margins. Finally, the percentages received by wholesalers and retailers are the differences between the cost of goods sold by wholesalers and retailers and the respective net sales expressed as ratios of the total cost to users.

Table 1.—Percentage Distribution of Total Cost of Consumption Commodities, 1929–39

Major commodity group	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
All consumption commodities:											
Percentage received by producers	61.4	61.4	59.8	59.5	56.9	59.6	62.4	62.5	62.5	61.9	61.4
Percentage received by distributors	38.6	38.6	40.2	40.5	43.1	40.4	37.6	37.5	37.5	38.1	38.6
Transportation, producers to distributors	3.2	3.1	3.7	4.2	4.5	4.1	3.9	3.8	3.7	4.1	4.1
Wholesalers	6.9	6.6	6.7	6.6	6.9	6.3	5.7	5.8	6.0	6.1	6.4
Retailers	28.5	28.9	29.8	29.7	31.7	30.0	28.0	27.9	27.8	27.9	28.1
Perishable consumption commodities:											
Percentage received by producers	63.7	62.6	60.3	59.7	58.2	60.8	64.4	64.2	64.5	63.1	63.1
Percentage received by distributors	36.3	37.4	39.7	40.3	41.8	39.2	35.6	35.8	35.5	36.9	36.0
Transportation, producers to distributors	4.1	4.3	5.0	5.6	5.6	5.0	4.7	4.4	4.3	5.0	5.0
Wholesalers	6.9	7.1	7.3	7.5	7.4	6.7	5.8	6.0	6.2	6.7	7.0
Retailers	25.3	26.0	27.4	27.2	28.8	27.5	25.1	25.4	25.0	25.2	24.9
Semidurable consumption commodities:											
Percentage received by producers	62.7	63.3	62.5	61.8	57.0	59.3	60.2	60.5	60.4	60.2	59.4
Percentage received by distributors	37.3	36.7	37.5	38.2	43.0	40.7	39.8	39.5	39.6	39.8	40.6
Transportation, producers to distributors	1.3	1.0	1.3	1.1	2.0	1.9	2.1	2.2	1.8	2.0	2.1
Wholesalers	3.7	3.3	3.4	3.2	3.5	3.4	3.0	3.0	3.2	3.1	3.2
Retailers	32.3	32.4	32.8	33.9	37.5	35.4	34.7	34.3	34.6	34.7	35.3
Durable consumption commodities:											
Percentage received by producers	54.3	55.2	54.9	55.5	50.5	54.6	57.7	58.8	58.8	58.7	57.7
Percentage received by distributors	45.7	44.8	45.1	44.5	49.5	45.4	42.3	41.2	41.2	41.3	42.3
Transportation, producers to distributors	3.0	2.0	2.2	2.4	3.5	3.1	3.0	3.6	3.4	3.0	3.3
Wholesalers	10.0	9.0	8.8	7.7	9.7	8.9	8.8	8.6	8.4	7.7	7.9
Retailers	32.7	33.8	34.1	34.4	36.3	33.4	29.9	29.0	29.4	30.6	31.1

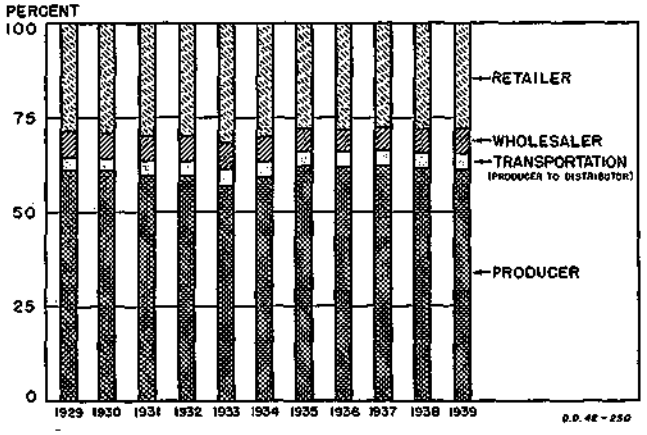
Source: U. S. Bureau of Foreign and Domestic Commerce.

[1] Shaw, William H., "The Gross Flow of Finished Commodities and New Construction, 1929–41," *Survey of Current Business*, April 1942, p. 13.

[2] It should be kept in mind that the data are rough estimates and that their reliability is dependent on the sources utilized. See Appendix note for a description of sources and methods.

The distributive agencies received from 38 to 43 percent of the total expenditures made for all consumption commodities during the past decade.[3] Although a definite cyclical fluctuation may be noted, the year-to-year changes are not especially marked nor is any decided trend indicated. Increasing gradually from 39 percent in 1929 to 41 percent in 1932, the percentage rose to 43 in 1933, dropped back to 40 in the following year and then became stabilized at 38 percent for the next 5 years.

Figure 5.—Percentage Distribution of Total Cost of Consumption Commodities



Source: U. S. Department of Commerce.

Analysis of the percentage going to each of the distributive agencies during the period reflects the same general picture, although the cyclical fluctuation at the wholesale level is less pronounced than that of the other two components. From 3 to 4 percent of the expenditures made for consumption commodities went to the agencies transporting these goods from the producer to the initial distributor, 6 to 7 percent went to wholesalers, and 28 to 32 percent to retailers.

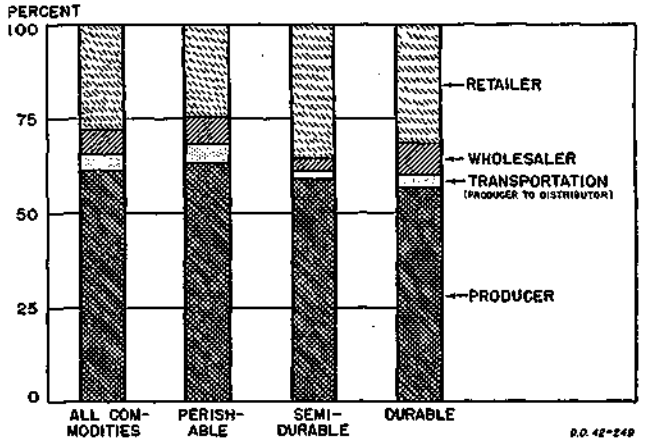
Although indicative of the magnitude of the costs of distribution and the year-to-year changes in their relation to the total expenditures for consumption commodities, this over-all picture does not reveal the marked differences obtaining in the trends and levels of the broad classes of commodities included. The amount received by distributors of perishable consumption commodities [4]—chiefly foods and fuels—ranged from 36 to 42 percent of the total price paid, or slightly less than that for all commodities as a whole. Since the value of the commodities comprising this group constitutes about two-thirds that of all consumption commodities, the existence of a marked similarity in both the magnitude and changes of the ratios for this group and those for all commodities combined is not surprising.

[3] These estimates are lower than those made by the Twentieth Century Fund in *Does Distribution Cost Too Much?* (New York, 1939), because of differences in definition. Distributive costs in that study included transportation and storage charges for raw materials and goods in various stages of manufacture destined for further fabrication. Since these charges are included in the value of the finished product at the point of output, they are considered in this article as a cost of production.

[4] The commodities included in the various major groups are indicated by the minor group designations in table 3.

A larger percentage of the final cost went for the transportation of perishable consumption commodities from the producer to the distributors than was the case in the other major groups. The 5-percent ratio obtaining in 1939 is representative of the share received during the entire 11-year period by this segment of our distribution system, ranging as it did between 4 and 6 percent. This larger percentage is attributable chiefly to the lower value of most of these commodities at the point of production and fairly long hauls. For example, neither fresh produce nor coal requires much processing before entering distributive channels, and both have relatively low values per carload. Moreover, improved methods of refrigeration have resulted in fresh fruits and vegetables being shipped increasingly greater distances.

Figure 6.—Percentage Distribution of Total Cost of Consumption Commodities by Major Groups in 1939



Source: U. S. Department of Commerce.

In contrast, the 25 to 29 percent of the final cost received by the retailer represents a much smaller proportion than that accruing to retailers from the semidurable and durable groups, in part a reflection of the high turn-over rate of foods. The portion going to the wholesaler varied from 6 to nearly 8 percent for the same period. Cyclical fluctuations and other factors affecting the wholesale and retail segments are discussed in the section on "Gross Margins."

The total distributors' share of expenditures for semidurable consumption commodities differed only slightly from that obtaining for the perishable group in the years prior to 1935. Since that time, however, the percentage going to distributors for the latter group declined, whereas that going to distributors of semidurable items remained relatively constant.

On the other hand, the components of the total distributors' share differed markedly between the two groups. The commodities classified as semidurable—clothing, light housefurnishings, etc.—are for the most part manufactured in many sections of the country and therefore require relatively shorter hauls to reach the distributor. Furthermore, these commodities have

relatively high values per carload. For these reasons the portion of the final cost going to those transportation agencies that moved these goods from the factory to the distributors did not exceed 2 percent during the 11 years. The wholesalers' share of the total cost was also lower than that for either of the other two major groups of commodities, fluctuating between 3 and 4 percent over the entire period. On the other hand, the amount going to the retailer totaled at least one-third of the entire expenditure for these items—a higher ratio than that recorded for the other groups.

Approximately 42 percent of the amount spent in 1939 for durable consumption goods went to pay for the distributive services rendered. From 1929 through 1932 the average was 45 percent, then it rose to nearly 50 percent in 1933 but dropped back to 45 percent in the following year from which point it settled to the 41–42 percent level maintained since 1935.

Longer hauls from the geographical centers of production, which tend to be highly concentrated for this group of commodities, resulted in a higher proportion of their final value going to agencies engaged in transporting them to the distributors than was the case for semidurable goods. The ratio, which ranged between 2 and 4 percent over the decade, did not approach that of the perishable group, however. The portion of the final value going to the retailer has varied during this period from 29 to 36 percent with the percentage for 1939 being 31. The remaining 8 to 10 percent was paid to the wholesaler.

Wholesale and Retail Gross Margins.

Wholesale and retail gross margins were estimated for each minor commodity group by computing the ratio of operating expenses to total net sales and making an appropriate allowance for profit or loss. These margins, being percentages of sales, must be converted to mark-ups or percentages of cost before they can be applied to dollar cost values as was done in the study presented in the April Survey.[5] Transportation margins were computed by expressing freight revenues as percentages of commodity values at point of destination.

The sum of these gross margins does not equal the percentage distribution of the total cost going to these distributors for two reasons. First, the gross margins express the cost of each step of distribution as a percent of the commodity value at that point, while the table showing the distribution of the total cost expresses each of these costs as a percent of the final cost. The use of a different base naturally yields a different percentage relationship for each component. The second reason is that some goods do not flow through each of the successive stages comprising the distribution system but skip one or more steps. For instance, analysis of the sales of manufacturers shows that a substantial portion is sold directly to retailers and consumers and thus does not pass through the wholesale stage. Similarly, some of the sales made by wholesalers bypass the retailers and go directly to consumers.

Cyclical fluctuations were more pronounced for the transportation margins than for either the wholesale or retail margins. Only one major change was made in the freight rate structure of the railroads during the period covered by this study so that the transportation charges were far more rigid than the values of the various commodities to which they applied. The more important factors contributing to the differences in these transportation margins between commodity groups have already been indicated in the preceding section and will therefore not be repeated. The basic data are shown, however, with the other margins in tables 2 and 3.

The wholesale gross margin for all consumption commodities rose from 14 percent in 1929 to over 15 percent in 1933 and dropped to less than 13 percent in 1935. These figures represent both the upper and lower limits for the fluctuations during the entire 11-year period. An inverse cyclical movement is thus clearly evidenced—a characteristic of all the gross margins in this study.

Table 2.—Transportation Charges (Producers to Distributors) and Gross Margins, by Major Commodity Groups, 1929–39

Major commodity group	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Transportation charges (producers to distributors) as percentages of commodity values at destination:											
Perishable consumption commodities [1]	5.8	5.8	7.3	7.8	8.4	6.8	6.4	6.4	5.9	7.1	7.3
Semidurable consumption commodities	2.0	1.7	2.2	2.6	3.3	2.9	3.2	3.3	2.9	3.3	3.3
Durable consumption commodities	3.8	4.0	4.4	5.2	5.8	5.5	5.8	5.7	5.3	5.2	5.2
All consumption commodities [1]	4.5	4.6	5.7	6.4	7.0	5.9	5.6	5.6	5.2	6.0	6.1
Wholesale gross margins: [2]											
Perishable consumption commodities [1]	12.4	13.1	14.0	14.5	14.4	13.0	11.1	11.4	11.7	12.4	13.3
Semidurable consumption commodities	14.2	14.2	14.5	15.0	16.1	16.3	14.5	14.2	14.9	14.6	15.1
Durable consumption commodities	19.7	19.8	19.5	18.6	19.4	18.2	16.4	16.3	16.3	16.8	16.7
All consumption commodities [1]	14.3	14.6	15.0	15.1	15.2	14.2	12.5	12.6	12.9	13.4	14.1
Retail gross margins: [2]											
Perishable consumption commodities [1]	26.3	26.9	28.4	28.4	29.9	28.6	26.1	26.4	25.9	26.2	26.7
Semidurable consumption commodities	33.1	33.0	33.5	34.3	38.1	36.0	35.3	35.0	35.2	35.3	36.0
Durable consumption commodities	34.0	33.8	35.3	35.5	37.9	34.5	31.2	30.2	30.5	31.6	32.1
All consumption commodities [1]	29.6	30.0	30.9	30.8	32.8	31.2	29.0	28.9	28.7	29.0	29.7

[1] Excludes nonmanufactured household fuels for which data are not available.
[2] Gross margin is the difference between cost of goods sold and net sales, expressed as a percentage of net sales.

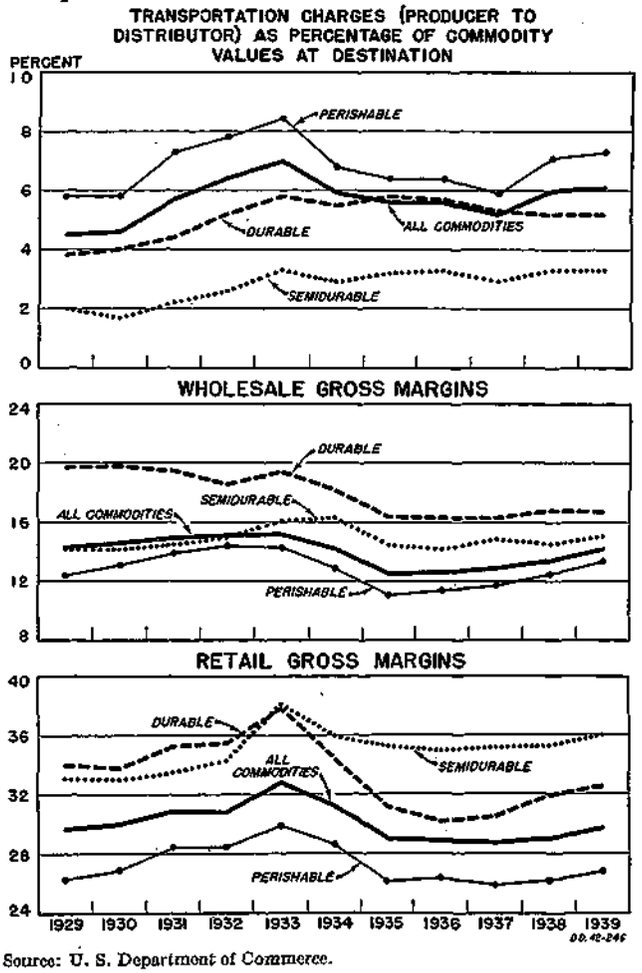
Source: U. S. Bureau of Foreign and Domestic Commerce.

The causes of this inverse movement are found in the fact that prices paid by wholesalers [or retailers] for commodities are more sensitive than prices received, and in a greater rigidity in some operating expenses than in total realized sales. With respect to commodity prices, it is clear that a lag of wholesale [or retail] prices behind prices paid by wholesalers [or retailers] tends to raise margins on the downswing of the cycle and lower them on the upswing. With respect to

[5] Gross margins may be converted to mark-ups by use of the equation $M=\frac{100G}{100-G}$ where M is the mark-up or percentage of cost and G is the gross margin, or percentage of sales.

rigidity of operating expenses it is evident that when the volume of sales drops, a corresponding decrease in expenses, especially in rents, interest payments and property charges, cannot usually be effected. Since for competitive reasons the wholesaler [or retailer] may find it difficult to meet this relative rise in costs by a price rise, an increase in the ratio of these costs to sales is inevitable.

Figure 7.—Transportation Charges (Producer to Distributor) and Gross Margins of Consumption Commodities by Major Groups



Source: U. S. Department of Commerce.

Retail gross margins are much larger than the corresponding margins in wholesale trade for the same types of commodities. Since 1929 the retail gross margin for all consumption commodities has ranged from 29 to 33 percent—a level slightly more than double that of the margin for wholesale trade. This difference in level is partly the result of smaller average sales volume per establishment and of the multiplicity of services offered, e. g., local regular and special deliveries, privilege of return and exchange, trade-in privileges, "free" installation, extension of liberal credit terms, elaborate newspaper and radio advertising, provision for free parking, maintenance of complete stocks of all sizes and grades and the need for accessible locations at street intersections or along important thoroughfares.

A more intensive cyclical fluctuation as well as a lower level differentiate both wholesale and retail margins for perishable consumption commodities from those of the other two groups. One probable reason for this is the greater intensity of competition in the distribution of these goods while another factor is the smaller ratio of average stock inventory to annual sales for many of these commodities and hence the lower unit cost for investment in stock, storage space, and interest charges. The wholesale margin has fluctuated between 11 and 14 percent for these commodities while the retail margin has ranged from 26 to 30 percent.

Changes in wholesale gross margins for semidurable consumption commodities have not been as marked as those for the other two groups. During the 11 years these margins did not vary over 2 percent, having fluctuated around 15 percent for the entire period. In marked contrast the retail gross margin for semidurable commodities shows a definite upward trend as compared to the fairly stabilized levels of retail margins for the perishable and durable groups. The retail margin rose from 33 percent in 1929 to a peak of 38 percent in 1933, and then dropped back to about 35 percent during the late 30's.

Durable consumption commodities as a group reflect higher wholesale margins than those shown by the nondurable groups. This difference in level has decreased substantially since 1929, however, there having been a downward trend for the durable group as compared with the slight upward trend for the other two groups. Thus the wholesale margin for durables in 1929 was 20 percent and for 1939 was 17 percent.

The trend of the retail gross margin for durable consumption commodities differed so markedly from those of the other major groups since 1929 that an examination of the components was necessary in order to understand the movements of the group as a whole. The margins for passenger cars were found to display trends at variance with those shown by the margins of the other items classified as durable. However, if passenger cars are eliminated from the group, the trend is found to parallel that for the average margin of all consumption commodities but at a level approximately one-third higher. Lower rates of turnover and the complexity of services involved in selling durable commodities, notably costs of handling trade-ins and for some commodities costs of installation, are factors contributing to this higher level.

Gross Margins for Minor Commodity Groups.

The year-to-year changes by major groups reflect more than the trends of the margins of the commodities within a group; they are influenced by shifts in the relative importance of the various commodities. This is especially true in cases where there is a marked divergence in the margins of these commodities. For instance, passenger cars constituted only 31 percent of the dollar value of all durable consumption commodities purchased

Table 3.—Transportation Charges (Producers to Distributors) and Gross Margins, by Minor Commodity Groups, for Specified Years

Minor commodity groups	Transportation charges (producers to distributors) as percentage of commodity values at destination				Wholesale gross margin [1]				Retail gross margin [1]			
	1929	1933	1935	1939	1929	1933	1935	1939	1929	1933	1935	1939
All consumption commodities [2]	4.5	7.0	5.6	6.1	14.3	15.2	12.5	14.1	29.6	32.8	29.0	29.7
Perishable consumption commodities:												
1. Manufactured foods and kindred products	4.3	7.1	4.9	5.6	10.5	12.5	9.3	12.6	25.1	28.5	25.5	26.1
2. Nonmanufactured foods	8.8	16.1	12.1	13.8	12.6	15.6	12.2	14.2	26.5	34.7	28.5	30.5
3. Cigars, cigarettes, tobacco, and smoking supplies	1.1	1.2	1.2	.9	8.5	7.1	5.9	5.5	32.1	30.5	25.3	26.2
4. Drug preparations and household medical supplies	2.2	3.6	3.5	3.5	17.8	16.1	15.2	19.8	30.4	30.2	28.2	29.1
5. Toilet preparations	4.4	4.5	3.8	3.9	30.4	32.1	27.8	38.2	30.4	30.2	28.2	29.1
6. Cleaning and polishing preparations	4.4	4.5	3.8	3.9	16.3	15.6	12.4	15.5	18.9	19.3	17.7	20.4
7. Magazines, newspapers, and other printed matter	2.1	3.6	3.5	3.5	16.8	15.0	14.8	15.1	22.7	22.2	22.4	21.5
8. Stationery and writing supplies	2.1	3.6	3.5	3.5	26.3	28.0	22.1	20.1	37.7	36.4	35.3	32.9
9. Miscellaneous household paper products	2.1	3.6	3.5	3.5	15.5	18.1	15.4	17.3	32.2	29.8	29.0	26.6
10. Toys, games, sport supplies	2.1	3.6	3.5	3.5	18.9	19.0	19.8	17.9	29.4	29.6	28.6	31.3
11. Manufactured household illuminating and heating products	11.1	17.6	17.2	22.6	10.2	12.7	9.4	12.2	27.2	33.2	27.6	20.5
12. Nonmanufactured household fuels	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
13. Fuels for passenger cars	10.7	13.0	12.1	14.3	18.0	23.8	18.7	14.4	23.6	27.8	24.8	22.4
All perishable consumption commodities [2]	5.8	8.4	6.4	7.3	12.4	14.4	11.1	13.3	26.3	29.9	26.1	26.7
Semidurable consumption commodities:												
14. Clothing and accessories	2.1	3.6	3.5	3.5	12.8	11.8	11.0	11.8	33.6	38.4	35.6	36.1
15. Shoes and other footwear	2.1	3.6	3.5	3.5	12.8	13.9	11.7	12.2	32.0	35.8	31.9	31.4
16. Personal furnishings	2.1	3.6	3.5	3.5	31.7	28.9	26.3	30.1	32.5	28.1	32.0	31.8
17. Drygoods and notions	1.4	1.8	1.6	2.1	11.6	11.8	10.1	9.6	29.1	34.7	31.3	31.9
18. Semidurable house furnishings	2.1	3.6	3.5	3.5	21.8	27.4	21.8	19.8	44.0	55.4	47.7	49.5
19. Replacement tires and tubes	1.6	1.9	1.5	1.6	12.1	13.2	12.3	15.3	24.2	30.5	28.7	29.0
20. Passenger car replacement parts and accessories	1.5	2.8	2.7	2.3	20.5	30.4	24.5	26.9	30.4	37.4	34.1	34.2
All semidurable consumption commodities	2.0	3.3	3.2	3.3	14.2	16.1	14.5	15.1	33.1	38.1	35.3	36.0
Durable consumption commodities:												
21. Household furniture	4.9	8.0	8.5	8.9	13.3	17.8	18.2	19.4	33.1	40.7	38.6	38.5
22. Floor coverings	2.1	3.6	3.5	3.5	11.8	11.1	12.7	13.2	34.3	38.8	36.9	36.6
23. Miscellaneous durable house furnishings	2.1	3.6	3.5	3.5	18.7	19.9	18.2	16.0	36.8	46.7	38.8	40.5
24. Heating and cooking apparatus	2.0	1.5	1.3	1.4	25.3	20.7	22.5	21.8	45.2	46.2	40.1	34.6
25. Refrigerators, washing machines, and sewing machines	2.0	1.5	1.3	1.4	27.0	25.3	21.4	18.2	33.3	34.9	30.9	30.6
26. Electrical household appliances	2.0	1.5	1.3	1.4	15.2	19.3	17.7	16.0	43.6	48.1	43.7	39.7
27. Other household appliances	2.0	1.5	1.3	1.4	21.7	22.8	19.7	19.6	35.5	40.3	34.8	35.7
28. China, glassware, tableware, and household utensils	4.9	7.6	6.9	7.3	18.7	17.7	19.4	19.7	38.8	52.4	39.9	33.6
29. Radio apparatus and phonographs	2.0	1.5	1.3	1.4	22.0	22.4	18.6	18.9	44.8	46.8	41.4	36.4
30. Pianos and organs	4.9	8.4	8.9	9.3	24.1	31.9	25.7	21.4	35.3	42.3	42.5	40.2
31. Other musical instruments	2.1	3.6	3.5	3.5	27.7	36.6	29.5	24.7	35.3	42.3	42.5	40.2
32. Clocks and watches	2.1	3.6	3.5	3.5	24.8	18.6	18.5	16.8	42.3	48.1	42.7	44.3
33. Jewelry and sterling silverware	2.1	3.6	3.5	3.5	20.4	20.1	15.9	18.4	40.2	48.3	42.6	44.0
34. Books and other durable printed matter	2.1	3.6	3.5	3.5	39.2	36.2	29.6	28.8	40.2	41.6	39.7	35.6
35. Writing equipment	2.1	3.6	3.5	3.5	32.7	35.3	29.2	32.4	46.4	48.6	42.9	37.1
36. Ophthalmic products, surgical and orthopedic appliances	2.1	3.6	3.5	3.5	36.5	39.9	38.7	36.2	60.5	61.3	58.6	57.1
37. Monuments and tombstones	10.6	11.5	8.2	10.2	20.0	20.0	20.0	20.6	50.0	50.0	50.0	50.0
38. Luggage	2.1	3.6	3.5	3.5	26.7	22.8	20.4	16.5	40.4	45.6	38.9	34.4
39. Wheel goods, durable toys and sports equipment	2.1	3.6	3.5	3.5	22.0	18.7	20.7	17.8	32.8	34.4	32.6	32.8
40. Passenger cars	4.6	7.9	7.3	6.5	18.0	15.7	12.8	12.8	25.4	22.2	18.1	16.9
41. Pleasure-craft	2.1	3.6	3.5	3.5	18.0	15.7	12.8	12.8	25.4	22.2	18.1	16.9
All durable consumption commodities	3.8	5.8	5.8	5.2	19.7	19.4	16.4	16.7	34.0	37.9	31.2	32.1

[1] Gross margin is the difference between cost of goods sold and net sales, expressed as a percentage of net sales.
[2] Excludes nonmanufactured household fuels for which data are not available.
[3] Data are not available.
Source: U. S. Bureau of Foreign and Domestic Commerce.

in 1933 as compared with 39 percent in 1935. The retail gross margin for cars during this period dropped from 22 to 18 percent, which is only two-thirds of the margin for the group as a whole. Relationships such as these, together with the usefulness of data covering specific types of commodities, make the presentation of gross margins by minor commodity groups (table 3) desirable. The table is confined to the 4 years for which business censuses were taken because of the larger amount of basic data available and the fact that these years serve as convenient benchmarks; 1929 and 1939 were years of relative prosperity, 1933 a year of depression, and 1935 a year of recovery.

It may be noted that for both wholesale and retail margins the dispersion within each of the major commodity groups is considerable. Moreover, there are interesting differences in the movements between the specified years exhibited by the minor commodity groups, even though there is a general tendency for the margins to fluctuate inversely with the business cycle. All these differences would seem to offer a fruitful field of investigation for marketing and commodity specialists.

Sources and Methods

Transportation Charges.—Freight revenue as a percent of the value at point of destination of goods being transported has been computed periodically by the Interstate Commerce Commission for each of its 157 commodity classifications.[6] In addition to making estimates for the intervening years, it was necessary to revise the earlier I. C. C. studies due to an improvement in methodology developed in the 1939 report. Separate ratios were computed for the 89 I. C. C. commodity classifications that were found to be related to one or more of the 41 groups of consumption commodities in the final products classification (listed in table 3). Each ratio was obtained by relating the freight revenue per ton of freight carried to the value of the commodity per ton at point of destination.

Freight revenue per ton of freight carried was computed by dividing the amount of freight revenue from total tons carried by the number of tons of revenue freight originated or terminated, whichever was larger.[7] Since much of the tonnage originated by Class II, Class III, and other railways contiguous to Class I railways, is delivered to Class I railways for further haul and delivery at destination, the number of tons terminated better represents the volume of certain commodities handled by Class

[6] Interstate Commerce Commission, "Freight Revenue and Value of Commodities Transported on Class I Steam Railways in the United States," for the calendar years 1928, 1930, 1933, 1936, and 1939 (Statement Nos. 29111, 3242, 3552, 3747, and 4045).

[7] Published annually by the Interstate Commerce Commission in table 3 of "Freight Commodity Statistics, Class I Steam Railways in the United States."

I railways than the tons reported as originated by them. Hence, the number of tons originated, or terminated, whichever was larger, was used.

The value of each commodity group at producers' delivered prices was computed in the I. C. C. studies by averaging with appropriate weights wholesale price data obtained from various sources such as the Bureau of Labor Statistics, the Bureau of Mines, the Department of Agriculture, and the Department of Commerce. Price series for the intervening years were obtained as far as possible from the same sources to provide an unbroken series of comparable values for each group of commodities.

For those groups in which other forms of transportation carried a substantial proportion of the total amount shipped and for which sufficient data were available, the percentages derived from the I. C. C. data on railroads were supplemented to provide the average ratio of the total cost of all types of transportation to the value of the goods conveyed. Thus data on the movement of petroleum products through pipe lines and nonmanufactured foods by truck were analyzed and included in the final transportation ratios.

Wholesale Gross Margins.—The detailed kinds of business reported in the *Wholesale* Censuses for 1929, 1933, 1935, and 1939 were first classified so as best to correspond with the minor commodity groups. Operating expenses as a percentage of net sales were then computed for each type of distribution: Service and limited function wholesalers, manufacturers' sales branches (with stocks), manufacturers' sales offices (without stocks), and agents and brokers. These percentages were averaged by weighting the different types by the relative volumes of sales to retailers and direct to home consumers. Since not all the Censuses reported in corresponding detail, adjustments of the sort described below for "jewelry" had usually to be made. No allowance was made for the services of proprietors of unincorporated establishments, but this omission results in an understatement of the ratio of total operating expenses to net sales of only a fraction of 1 percent.

Principal sources used to interpolate Census year expense ratios for intercensal years were the series of wholesale surveys made by Dun and Bradstreet, and *Distribution Costs, An International Digest*, Graduate School of Business Administration, Harvard University, 1941. When appropriate wholesale data were lacking, the movement of the comparable group expense-ratios for retail trade were used.

Profit and loss allowances required to translate the expense ratios into gross-margin ratios were derived from the special wholesale surveys whenever possible. For the remaining groups gross margin-expense relationships developed for comparable retail groupings were used. Whenever possible the adequacy of the profit and loss allowances was checked by comparison with *Statistics of Income* data for wholesale corporations, 1929–39, and with unpublished tabulations for noncorporate wholesale concerns for 1936 and 1939.

Retail Gross Margins.—Operating expenses as a percentage of net sales for comparable types of stores most closely related to the various minor commodity groups were derived for 1929, 1933, 1935, and 1939 from the *Retail* Censuses. For 1939 the Census reported only pay rolls; allowances for other operating expenses were based on the 1935 relationship of all operating expenses to pay rolls. Since the 1933 *Census of Retail Trade* alone included a satisfactory allowance for the services of proprietors and firm members of unincorporated establishments, a similar adjustment to the expense data had to be made for the other census years. This was done on a basis comparable with that for 1933.

Expense-ratios derived from a wide variety of sources were used to interpolate for intercensal years. Operating results of department and specialty stores by commodities and by size of stores were obtained from annual reports on *Departmental Merchandising and Operating Results of Department Stores and Specialty Stores* published by the Controller's Congress of the National Retail Dry Goods Association. Special studies made by Dun and Bradstreet, by the Federal Trade Commission, and by the Harvard University Bureau of Business Research, and by various trade groups provided additional ratios for many kinds of businesses.

These sources also provided the basic data for the profit and loss allowances required to translate the expense ratios into gross-margin ratios. Whenever possible the adequacy of the derived profit and loss allowances were checked by comparison with *Statistics of Income* data for retail corporations, 1929–39, and with unpublished tabulations for noncorporate retail concerns for 1936 and 1939.

For further clarification of the actual procedure involved in estimating the wholesale and retail margins, the "jewelry and sterling silverware" group is described. Reported net sales and operating expenses were obtained from the *Wholesale* Census of 1939 for each of the four general types of jewelry wholesalers, i. e., service and limited function wholesalers, manufacturers' sales branches (with stocks), manufacturers' sales offices (without stocks), and agents and brokers. Ratios of operating expenses to net sales were computed for the four types and a weighted average calculated on the basis of the relative amounts of sales to retailers and ultimate consumers. The same procedure was followed for the three earlier census years except that for 1929 the lack of sufficient data on the distribution of sales made it necessary to use the weights derived for 1935. A slight adjustment was also required in the 1933 ratios because of the less detailed break-down of sales as compared with 1935. This too was based on 1935 relationships.

The ratios for census years were interpolated for intercensal years by using a weighted average of ratios derived from annual studies of the National Wholesale Jewelers Association (reprinted in the Harvard digest of *Distribution Costs*) and from a Dun and Bradstreet survey for 1933 and 1934 of wholesale jewelry concerns. Aggregate sales represented by each sample were used as weights. Net profit or loss ratios for the entire period were derived from the sample surveys and added to the operating expense ratios to obtain the wholesale gross margin.

Operating expenses as percentages of net sales for retail jewelry stores were computed for 1929, 1933, 1935, and 1939 after making an allowance for proprietors' services in 1929, 1935, and 1939 on the basis of the method suggested in the 1933 Census. An additional adjustment was necessary in 1939 because pay rolls alone were reported in that year. The 1935 ratio of total expenses to pay rolls was used as a basis for this adjustment.

Two studies provided ratios with which to interpolate for intercensal years: One of retail jewelry stores made by Dun and Bradstreet for 1933–36 and 1939; and one of jewelry departments of department stores made annually by the Controller's Congress and published in its reports on *Departmental Merchandising and Operating Results*. These sources also provided the profit and loss ratios from which the allowances required to translate the expense ratios into gross margins were derived. The profit and loss ratios derived for 1936 and 1939 were checked against those reported for a sample of noncorporate retail jewelry stores in an unpublished tabulation of income-tax returns.

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